

WHAT IS CLAIMED IS:

1. A method of producing a plastic molding, comprising the steps of:
  - heating [preparing] a mold assembly including at least one transfer surface, at least one slide cavity piece providing a surface other than the transfer surface, and at least one vent hole for supplying a compressed gas to a prescribed mold-temperature lower than a softening point of a resin to be molded, the slide cavity piece and the at least one transfer surface being arranged to form at least one cavity;
  - heating the resin to a prescribed resin-temperature above the softening point thereof, to produce a molten resin;
  - injecting the molten resin into the cavity so that the cavity is filled with the molten resin;
  - applying a resin-pressure to the molten resin so that the molten resin is brought into tight contact with the at least one transfer surface;
  - cooling the resin to a temperature lower than a softening point thereof so that the molten resin is solidified;
  - sliding the slide cavity piece at a prescribed time in a direction away from the solidified resin by supplying compressed gas into the cavity via the vent hole so that a gap is forcibly formed between the resin and the slide cavity piece; and
  - opening the mold assembly so that the plastic molding may be taken out from the mold assembly.
2. The method of producing a plastic molding according to claim 1, wherein the resin-pressure at the [timing] time when the slide cavity piece is slid is equal to or less than 60 Mpa.
3. The method according to claim 1, wherein the compressed gas has a gas-pressure in a range of from 0.1 to 2 MPa.

4. A mold assembly for producing a plastic molding, the mold assembly including a cavity having a prescribed volume, at least one transfer surface, and at least one non-transfer surface other than the transfer surface, the mold assembly comprising:

a slide cavity piece providing the non-transfer surface; and

a vent hole for supplying a compressed gas into the cavity.

5. The mold assembly according to claim 4, wherein the vent hole is configured to supply a gas having a gas pressure equal to or less than 60 MPa.

6. The mold assembly according to claim 4, wherein the vent hole is configured to supply a gas having a gas pressure from 0.1 to 2 MPa.

7. The mold assembly according to claim 4, wherein the vent hole is disposed in the slide cavity piece.

8. The mold assembly according to claim 4, wherein the vent hole is disposed between the slide cavity piece and a portion of the mold assembly adjacent to the slide cavity piece.

9. The mold assembly according to claim 4, further comprising a pressure control device [for pressing] positioned to press the slide cavity piece.

10. The mold assembly according to claim 9, wherein the pressure control device further includes a driving mechanism driving the slide cavity piece.

11. The mold assembly according to claim 4, further comprising a pressure detector for detecting the resin-pressure in the cavity and a sliding mechanism for sliding the slide cavity piece, wherein the sliding mechanism is positioned to drive the slide cavity piece on the basis of information from the pressure detector.

12. The mold assembly according to claim 5, further comprising a pressure detector for detecting the resin-pressure in the cavity and a sliding mechanism positioned to drive the slide cavity piece, wherein the sliding mechanism drives the slide cavity piece on the basis of

information from the pressure detector.

13. The mold assembly according to claim 9, further comprising a pressure detector for detecting the resin-pressure in the cavity and a sliding mechanism positioned to drive the slide cavity piece, wherein the sliding mechanism drives the slide cavity piece on the basis of information from the pressure detector.

14. The mold assembly according to claim 10, further comprising a pressure detector for detecting the resin-pressure in the cavity and a sliding mechanism positioned to drive the slide cavity piece, wherein the sliding mechanism drives the slide cavity piece on the basis of information from the pressure detector.

15. The mold assembly according to claim 4, wherein a surface of the slide cavity piece that contacts the resin is processed with a surface treatment using a low adhesive material which has a low adhesive force with the resin.

16. The mold assembly according to claim 4, wherein a step is formed in a joint surface between the transfer surface and the slide cavity piece.

SAW AI 17. A plastic molding comprising:  
at least one transfer surface; and  
at least one imperfect transfer portion having a concave or convex shape, wherein the imperfect transfer portion is located in at least one prescribed portion of the plastic molding so as to release a residual resin-pressure and an inward deformation of the plastic molding.

18. The plastic molding according to claim 17, wherein the imperfect transfer portion is formed in a portion other than the transfer surface.

19. The plastic molding according to claim 18, wherein the imperfect transfer portion is formed in an extension-surface of the transfer surface.

20. The plastic molding according to claim 18, wherein the imperfect transfer

portion is formed so as to have a contour located along an edge of the transfer surface.

21. The plastic molding according to claim 20, further comprising a second transfer surface, wherein the imperfect transfer portion is formed in a portion between the transfer surface and the second transfer surface so as to have a contour located along both edges of the transfer surface and the second transfer surface.

22. The plastic molding according to claim 17, wherein the imperfect transfer portion is formed in a thin portion of the plastic molding.

23. The plastic molding according to claim 17, further comprising a second imperfect transfer portion, wherein both of the imperfect transfer portion and the second imperfect transfer portion are formed in a same surface other than the transfer surface.

24. The plastic molding according to claim 17, wherein the plastic molding is an optical element and wherein the transfer surface is an optical surface.

25. An injection molding method of producing a plastic molding having at least one transfer surface and at least one imperfect transfer portion, comprising a step of injecting [wherein] a resin [is injected] into a cavity of a mold assembly.

26. A method of producing a plastic molding having a at least one transfer surface and at least one imperfect transfer portion, comprising the steps of:

injecting a molten resin into a cavity of a mold assembly, the mold assembly including at least one transfer surface in the cavity;

applying a resin-pressure to the molten resin in the cavity so that the transfer surface is transferred to the molten resin, and then;

generating a local shrinkage for separation from the cavity so that a concave imperfect transfer portion is formed on the resin.

27. A method of producing a plastic molding having a at least one transfer surface

and at least one imperfect transfer portion, comprising the steps of:

injecting a molten resin into a cavity of a mold assembly for providing a cavity, the mold assembly including at least one transfer surface in the cavity;

applying a resin-pressure to the molten resin so that the transfer surface is transferred to the molten resin, and then;

generating a local release of the resin-pressure so that a convex imperfect transfer portion is formed on the resin.

28. The mold assembly according to claim 9, wherein the driving mechanism comprises an oil pressure cylinder.

29. The mold assembly according to claim 9, wherein the driving mechanism comprises an electric motor.